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Report of the Committee on Fare Review Mechanism

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REPORT OF THE COMMITTEE ON THE FARE REVIEW MECHANISM

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COMMITTEE ON THE FARE REVIEW MECHANISM

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THE COMMITTEE ON THE FARE REVIEW MECHANISM

c/o The Secretariat to the Committee
300, Beach Road #11-01, The Concourse, Singapore 199555

11 February 2005

Mr Yeo Cheow Tong
Minister for Transport

Dear Minister,

During the Committee of Supply debate in March 2004, you asked Mr Chay Wai Chuen as the Chairman of the Government Parliamentary Committee (GPC) for Transport, to form a Committee to undertake a review of the public transport fare review mechanism. In the course of the Committee's work, Mr Ong Kian Min, in his capacity as the newly appointed Chairman of the GPC for Transport, took over the chairmanship of the Committee in November 2004.

The Committee has now completed its work and herewith submits its report. In arriving at our recommendations, we have gathered feedback and suggestions from the public transport operators (PTOs), academics and professionals, as well as representatives from the feedback group, including the grassroots and student unions.

We have concluded that the price-cap model for regulating public transport fares should be retained as it provides incentives for the operators to be cost efficient within the service standards set by the regulator, and helps to ensure that fares remain affordable in the long term.

Nevertheless, we have identified two key areas for improvements – the fare adjustment formula and the tracking of the affordability of public transport fares.

While fares have been kept affordable under the "CPI + X" fare-cap framework, we recognise that the formula is not well understood by the public and conveys the misconception of a cost-plus regime. It is also unresponsive to prevailing economic conditions because wage and productivity values are locked in for 5 years. We therefore recommend introducing a new formula that not only responds better to cost changes but also extracts productivity gains from the PTOs based on a sharing of productivity gains achieved with the commuters. The formula will determine the supportable quantum for fare

adjustments but the PTC will continue to protect commuters' interests by varying or rejecting the fare adjustment in bad economic times.

To ensure that commuters' interests are further safeguarded, we also recommend that the PTC carry out a reality check on the PTOs' Returns-On-Total-Assets (ROTA) when evaluating applications for fare adjustment, and review the price index and productivity extraction used in the formula every three years. In addition, we recommend that the PTC track the affordability of public transport more closely based on the public transport expenditure and income of a typical family. We are confident that these recommendations will help the PTC to ensure the viability of public transport operations in Singapore while continuing to safeguard commuters' interests and keep fares affordable.

Lastly, the members of the Committee wish to thank you for giving us the opportunity to contribute to the Ministry's effort to improve our public transport regulatory framework.

Mr Ong Kian Min
(Chairman from 2 November 2004)

Mr Chay Wai Chuen
(Chairman from 26 May 2004 to 1 November 2004)

Mr Andy Gan Lai Chiang

Dr Ahmad Mohd Magad

Mr Ang Mong Seng

Dr Chong Weng Chiew

Mr Yeo Guat Kwang

Dr Phang Sock Yong

Mr Gerard Ee

Mr Leslie Chew

Mr Chan Tee Seng

MINISTER FOR TRANSPORT
REPUBLIC OF SINGAPORE

14 February 2005

Mr Ong Kian Min
Chairman
Committee on the Fare Review Mechanism

Dear Kian Min

Thank you for your letter dated 11 February 2005, and the Report of the Committee on the Fare Review Mechanism.

Your Committee's Report and its recommendations to improve the existing fare review mechanism are timely since the current value of X, set at 1.5%, in the existing "CPI + X" formula will expire this year. I am pleased that your Committee has actively gathered feedback and suggestions from the public transport operators (PTOs), academics and professionals, as well as representatives from the feedback group, including the grassroots and student unions.

I note that your Committee's recommendations for the fare adjustment formula are in line with the Government's financing framework where the Government provides for the transport infrastructure while commuters pay for the operating cost and the PTOs operate efficiently under the regulatory oversight of the Public Transport Council. This will serve the objective of keeping public transport fares affordable while ensuring the long-term viability of the PTOs.

The Government will consider the recommendations of your Committee and give its response in Parliament during the Committee of Supply debate in February/March 2005.

I thank you and the members of your Committee, as well as the organisations and individuals, who have contributed to this Report.

Yours Sincerely

YEO CHEOW TONG

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EXECUTIVE SUMMARY

1. Today, public transport fares are reviewed annually and adjustments, if any, are capped by the "CPI + X" formula, where CPI is the change in the Consumer Price Index over the previous year and X accounts for the net effect of wage changes after deducting productivity gains. For the period from 2001 to 2005, X was determined to be 1.5%. While this mechanism has worked well in keeping public transport fares affordable, the formula lacks transparency and is not easily understood by the general public. Commuters often question the need for the "X" element given that the public transport operators (PTOs) are already compensated for inflation in the formula.

2. During the Committee of Supply debate in March 2004, the Minister for Transport, Mr Yeo Cheow Tong, asked the Chairman of the Government Parliamentary Committee for Transport, Mr Chay Wai Chuen, to form a Committee to review the public transport fare review mechanism. The Terms of Reference are:

   a. The Committee shall review the current "CPI + X" fare review framework for the annual fare review exercise and propose improvements to the framework, including the "CPI + X" formulation.

   b. The revised fare review framework shall be premised on the following:

      i) It should balance keeping public transport fares affordable with the viability of the PTOs; and

      ii) It should incentivise the PTOs to be efficient in their operations and encourage productivity improvements.

   c. The Committee shall, in its review, ensure that the views of key stakeholders are adequately represented.

3. The Committee held a series of meetings to discuss the strengths and weaknesses of the existing framework and study the applicability of regulatory models used in other countries for public transport fare regulation, as well as in other industries such as utilities. It also conducted four dialogue sessions with the PTOs, academics and professionals, as well as representatives from the Feedback Group, the grassroots and student unions, to gather their feedback and suggestions.

4. In conducting the review, the Committee referred to the principles set out in the 1996 White Paper on "A World Class Land Transport System" on the financing framework for the public transport system:

   a. Fares have to be realistic and revised periodically to adjust for justifiable cost increases;

   b. Operating revenue must be able to cover operating costs; and

   c. There must be a sustainable policy on asset replacement.

5. The Committee recognised that in order to achieve the above outcome, operating revenue would have to more than cover operating costs but fare increases should not lead to an excessive rate of return for the PTOs.

6. Arising from the review, the Committee concluded that certain improvements could be made to the existing fare review mechanism. In summary, its recommendations are:

   a. The fare adjustment formula should be improved to provide greater responsiveness and clarity. The Committee proposes that the annual fare adjustment be based on the following formula:

      Maximum Fare Adjustment = Price Index – 0.3%

      where Price Index = 0.5CPI + 0.5WI, and 0.3% is the productivity extraction to be used for the next 3 years. CPI refers to the change in Consumer Price Index over the preceding year, and WI refers to the change in Average Monthly Earnings (Annual National Average) over the preceding year, adjusted to account for any change in the employer's CPF contribution rate.

      This formula compensates the PTOs for structural cost increases in their operating environment but also ensures that commuters' interests are protected by extracting a productivity component. The productivity extraction, pre-set at 0.3% for the next 3 years,

is based on a sharing of productivity gains achieved, and forces the PTOs to improve their operational and cost efficiencies. Furthermore, since wage movements are now accounted for annually, the formula is also more responsive to the actual economic conditions faced by commuters in general.

b. The formula will determine the supportable fare adjustment quantum in a given year. Nonetheless, the Public Transport Council (PTC) should retain the flexibility to vary the adjustment or to reject it, particularly when there are extenuating circumstances such as the following:

i) Adverse economic conditions; and

ii) Significant deterioration in the overall affordability of public transport fares.

c. To further ensure that commuters' interests are protected, the PTOs' Return-On-Total-Assets (ROTA) values will be compared against that of other similar risk industries at the annual fare review exercise. This will serve as a reality check on the fare levels hitherto approved by the PTC.

d. The formula will be valid for 3 years, after which the relative weightage of CPI and WI will be reviewed and recalibrated as necessary to reflect changes in the PTOs' cost structure. The productivity extraction of 0.3% will also be reviewed and adjusted based on the updated average productivity figures of the PTOs.

7. In order to monitor the affordability trend more closely, the Committee also recommends that the PTC track the annual change in the percentage of household income spent on public transport by a characteristic family which is representative of the main group of public transport users.

I INTRODUCTION

1. During the Committee of Supply debate in March 2004, the Minister for Transport, Mr Yeo Cheow Tong, asked the Chairman of the Government Parliamentary Committee (GPC) for Transport, Mr Chay Wai Chuen, to form a Committee to undertake a review of the public transport fare review mechanism. The current annual fare adjustment framework (which uses a "CPI + X" formula) was approved in 1997 for implementation with effect from the 1998 fare review exercise. Although it has worked well in keeping public transport fares affordable, the formula lacks transparency and is not easily understood by the general public. More fundamentally, it does not provide adequate incentives for the public transport operators (PTOs) to be efficient and innovative in their operations, which is the most important driver of low costs and affordable fares in the long run.

2. On 26 May 2004, the Committee on the Fare Review Mechanism (the Committee) comprising representatives from the GPC for Transport, the Consumers Association of Singapore (CASE), the Public Transport Council (PTC), the academia and the National Trades Union Congress (NTUC), was formed. The Committee convened its first meeting on 23 June 2004.

3. In the course of the Committee's work, Mr Ong Kian Min succeeded Mr Chay Wai Chuen as Chairman of the GPC for Transport. He therefore assumed chairmanship of the Committee on the Fare Review Mechanism on 2 November 2004. Mr Chay remained as a committee member until the completion of the review. The composition of the Committee on the Fare Review Mechanism is as follows:

   a. Mr Ong Kian Min, Chairman of the GPC for Transport and Member of Parliament (MP) for Tampines Group Representation Constituency (GRC), *(Chairman with effect from 2 November 2004)*;

   b. Mr Chay Wai Chuen, MP for Tanjong Pagar GRC *(Chairman from inception to 1 November 2004)*;

c. Mr Andy Gan Lai Chiang, MP for Marine Parade GRC;

d. Dr Ahmad Mohd Magad, MP for Pasir Ris-Punggol GRC;

e. Mr Ang Mong Seng, MP for Hong Kah GRC;

f. Dr Chong Weng Chiew, MP for Tanjong Pagar GRC;

g. Mr Yeo Guat Kwang, President, CASE (and MP for Aljunied GRC);

h. Dr Phang Sock Yong, Associate Professor, School of Economics and Social Sciences, Singapore Management University (SMU);

i. Mr Gerard Ee, member of the PTC;

j. Mr Leslie Chew, member of the PTC; and

k. Mr Chan Tee Seng, representative of the NTUC.

Terms of Reference

4. The Terms of Reference of the Committee are as follows:

a. The Committee shall review the current "CPI + X" fare review framework for the annual fare review exercise and propose improvements to the framework, including the "CPI + X" formulation.

b. The revised fare review framework shall be premised on the following:

i. It should balance keeping public transport fares affordable with the viability of the PTOs; and

ii. It should incentivise the PTOs to be efficient in their operations and encourage productivity improvements.

c. The Committee shall, in its review, ensure that the views of key stakeholders are adequately represented.

Scope of Review

5. The Committee covered the following areas in its review:

   a. Fare review model;

   b. Fare adjustment formula;

   c. Fare adjustment mechanism; and

   d. Affordability of public transport fares.

6. In reviewing these areas, the Committee sought to identify the strengths and weaknesses of the current framework and recommend improvements to the fare review mechanism to ensure that public transport fares would continue to remain affordable to the general public, while balancing the need for the PTOs to remain financially viable.

II APPROACH

1. The Committee met on ten occasions and held four dialogue sessions between June 2004 and December 2004 to review the current framework for fare revision and propose improvements to the framework, including the "CPI + X" formula.

2. In reviewing the existing fare review framework, the Committee kept in mind the responsibilities of the PTC in the area of approving fare applications as stated in the Public Transport Council Act (PTC Act) [1]. The PTC Act states that *"In considering any application for the approval of any bus or rapid transit system fare, the Council shall take into account:*

   a. The need for the applicant to remain financially viable; and

   b. The need for public interest to be safeguarded".

3. The revised framework had therefore to balance fare affordability with the viability of the PTOs. The Committee also considered how the revised framework could incentivise the PTOs to be more efficient in their operations, so that the productivity improvements could benefit commuters through keeping costs low, and hence fares affordable.

4. The Committee first set out to study the strengths and weaknesses of the existing fare review framework. Bearing in mind the limitations of the existing framework, the Committee next explored possible alternative regulatory models such as those adopted in other cities and industries.

5. In the course of its review, the Committee gathered feedback and suggestions from the following three groups through dialogue sessions:

   a. The Public Transport Operators;

   b. The Experts Group, comprising academics and professionals; and

[1] Article 24 (2) of the Public Transport Council Act.

c. The Feedback Group, including the grassroots and student unions.

6. The PTOs were asked to present their concerns, suggestions for improvement as well as possible models and formulae. The academics and professionals from the Experts Group were also asked for their views on the existing fare review mechanism, and consulted on what could serve as sustainable models. The representatives from the Feedback Group were asked, in addition, for feedback on the issue of affordability. A summary of the feedback and suggestions gathered is appended at **Annex A** and the list of attendees is shown in **Annex B**.

7. The dialogue sessions provided a useful platform to exchange views on the existing fare review framework. Through the dialogue sessions, the participants gained better insight into the workings of the current fare review framework and discussed possible improvements to the framework. All feedback and suggestions received were considered carefully by the Committee and where possible, incorporated into its recommendations.

8. In the course of the review, the Committee noted that the public transport industry structure had significant bearing on the framework for fare regulation. In our public transport system today, on-the-road competition is limited as the two bus companies operate their services largely within defined areas of responsibility. Coupled with this territorial monopoly, however, is the obligation for the bus companies to provide a daily scheduled bus service to within 400 metres of any residence[2], and throughout the public transport operating hours at an acceptable service interval (or headway), even though this service could be loss-making. Known as the Universal Service Obligation (USO), it safeguards commuters' interests by ensuring that less densely populated areas continue to be accessible by public transport. While a review of the public transport industry structure is beyond the terms of reference of its work, the Committee noted that introducing competition in the public transport industry could remove the need for fare regulation, as fares could then be left to the market. However, commuters' interests safeguarded by the USO under the current framework might also be compromised.

[2] In areas where there is at least a minimum level of daily passenger demand.

III THE FARE REVIEW FRAMEWORK

Overarching Policy

1. As stated in the 1996 White Paper on "A World Class Land Transport System", the current financing framework for the public transport system is based on the concept of partnership. Under this framework, the Government provides for the transport infrastructure, commuters pay for the operating costs and the PTOs operate efficiently under the regulatory oversight of the PTC.

2. This financing framework is established on 3 principles:

   a. Fares have to be realistic and revised periodically to adjust for justifiable cost increases;

   b. Operating revenue must be able to cover operating costs; and

   c. There must be a sustainable policy on asset replacement.

Role of the Public Transport Council

3. The PTC was set up on 14 August 1987, under the Public Transport Council Act (Cap 259B), as an independent body to regulate bus services and public transport fares. The main objective of the PTC is to balance commuters' interests with the long-term financial viability of the PTOs. The core functions of the PTC, as governed by the PTC Act, are as follows:

   a. To approve bus services that charge fares;

   b. To regulate bus service standards; and

   c. To approve bus and rapid transit system (RTS) fares[3].

[3] Since 1 September 1998, the PTC has de-regulated taxi fares.

4. Since the establishment of the PTC, it has consistently fulfilled its responsibility to safeguard commuters' interests by ensuring the proper scrutiny of the PTOs' cost justifications in their applications for fare adjustments.

Current Fare Revision Process

Fare Revision Timeline

5. Today, the operators may submit their annual fare revision applications to the PTC before 1st May. If an application is received, the members of the PTC will meet to deliberate and evaluate the application[4]. The PTC will then announce its decision in June and the approved fare revision, if any, will take effect from 1st July.

6. In the past, there were some years when the PTOs decided not to apply for fare revisions. In such years, there were no fare revisions even if the "CPI + X" formula had allowed for fare increases. A chronology of the major changes in public transport fares from 1990 to 2004 is given in **Annex C**.

Guiding Principles for Regulating Fares

7. Currently, the following key guiding principles are adopted by the PTC when assessing and approving the PTOs' fare revision applications:

   a. Safeguard commuters' interests by keeping public transport fares affordable, while ensuring the long-term financial viability of the PTOs;

   b. Ensure fare increases are soundly justified on the basis of cost increases and investments made in service improvements;

   c. Fare adjustments are capped by the "CPI + X" formula[5], which arose from the 1996 Cost Review Committee's recommendation for public transport fare increments to be small and regular;

[4] To assist the PTC in the evaluation, the Land Transport Authority (LTA) provides the PTC with an independent analysis of the fare revision application received.

[5] The fare adjustment cap of "CPI+X" was first announced by the PTC in 1997 to cap all future fare increases (i.e. with effect from 1998). Currently, X is set at 1.5% for the period from 2001 to 2005. Prior to that, it was 2% from 1998 to 2000.

d. Fares are reflective of the cost of delivering the service and the user pays according to usage. This is to ensure equity and fairness;

e. Fare structure is simple to understand, promotes multi-modal integration and is aligned with overall public transport policies; and

f. Prevailing economic conditions and unemployment situation.

Outcome of the Current Mechanism

Fare Changes To-date

8. Since the implementation of the current "CPI + X" framework in 1998, the actual fare adjustments have been kept in small steps. The average fare increase approved by the PTC for the bus and rapid transit system (RTS) from 1998 to 2004 is 0.7% per year[6]. This is significantly less than the allowed "CPI + X" fare adjustment cap of an average of 2.4% each year. In addition, the actual fare increase has also lagged behind the annual growth in national wages which is approximately 3.4% per year[7]. **Annex D** shows the extent to which historical fare changes have lagged behind the annual fare adjustment cap values since the implementation of "CPI + X" fare cap.

Affordability

9. Affordability of public transport can be assessed using two indicators – i) the percentage of income spent on public transport, which measures affordability in terms of ability to pay, as well as ii) the percentage of total expenditure incurred on public transport, which measures how prices have moved compared to other goods and services consumed. Using both indicators therefore provide a more complete picture of how affordability of public transport has changed.

10. In order to plot the affordability trend of public transport, data on monthly household expenditure on public transport and monthly household income can be obtained from the Household Expenditure Survey (HES) conducted regularly by the Department of Statistics (DOS) every 5 years. According to the HES findings as shown in **Annex E**, the

[6] Refers to the percentage increase in fare revenue as a result of a fare adjustment. Increase in individual trip fares may differ, as they are dependent on the approved fare structure.
[7] Data from the Ministry of Manpower (MOM).

average monthly household expenditure on public transport has increased from $149 (in 1998) to $160 (in 2003) since the implementation of the "CPI + X" fare cap. This is an increase of approximately 1.4% per year over the 5-year period. However, the average household income over the same period, as obtained from the HES findings, has grown faster at about 1.5% per year (from $5,262 in 1998 to $5,659 in 2003). This means that the burden of public transport cost on the average household has not increased over the last 5 years. Over a longer period, indications show that fares have become more affordable. In 1988, public transport expenditure of an average household constituted 3.6% of its monthly income. However, by 2003, this has fallen to 2.8%. (See Table 3 in **Annex E**)

11. Similarly, the percentage of total household expenditure spent on public transport derived from the HES shows that affordability has been stable in the last 5 years and improving over the last 15 years. In 1998, the percentage of total household expenditure spent on public transport was 4.0%, and this was largely unchanged in 2003 (4.1%). Viewing the trend over the last 15 years, this percentage has fallen from 5.1% in 1988 to 4.1% in 2003 (See Table 3 in **Annex E**).

12. The Committee also considered the public transport affordability trends for the different quintiles[8] by household income distribution. It noted that the proportion of total household expenditure spent on public transport for each quintile group has remained relatively stable over the last 5 years, with fluctuations of no more than 0.5% for each quintile group (See Table 4 in **Annex E**).

13. On the whole, commuters appeared to be satisfied with the provision of public transport and fare levels. According to a recent bus passenger satisfaction survey conducted by the PTC in 2004, the majority (66%) of the respondents indicated that they were satisfied with the value-for-money attribute of the bus services provided by the two bus operators. More importantly, nearly 70% of the respondents felt that their public transport expenditure on buses and RTS was affordable.

Comparison with Other Cities

14. Compared to other developed cities like Hong Kong, London and New York City, the average bus fare (S$0.65) and RTS fare (S$0.94) in

[8]Statistically, quintiles are groups of data (or cases) that divide a sample of data into five groups (or 5 quintiles) based on a range of a particular variable, e.g. household income distribution. The first (or lowest) quintile by household income group refers to the lowest 20th percentile group of household income distribution; the second quintile refers to the 20th - 40th percentile group; and so on.

Singapore are much lower. The findings remain consistent even after the average fares were adjusted using the purchasing power parity of the cities.

15. To further adjust for the individual's different earning power in these cities, the average fares were normalised against the Gross National Income (GNI) per capita. The results show that Singapore's average bus and RTS fares remain the lowest among the four cities. The details of the comparison are shown in **Annex F**.

16. In terms of value for money, foreigners, who had the experience of commuting on public transport systems in other cities, also rated Singapore's public transport system well. According to the Land Transport Authority's (LTA's) 2003 public opinion survey, a significant majority (97%) of the respondents felt that Singapore's public transport system offered good value for money. The rating for Hong Kong's public transport system was about 85%. For New York City, 55% of the respondents rated the system positively, while the figure for London was less than 31%.

Operators' Financial Performance

17. Under the current mechanism, public transport operations have generated sufficient revenue to cover operating costs without contributing to excessive profits. In the period from 1998 to 2003[9], the Return-on-Total-Assets (ROTA) for SMRT Buses[10] improved from 2.8% (in 1998) to 4.1% (in 2003), largely due to the exchange of feeder towns with SBS Transit arising from SBS Transit's successful bid to operate the North East Line (NEL), Sengkang and Punggol Light Rapid Transit (LRT) systems. SMRT Trains also saw a slight improvement in its ROTA from 3.9% (1998) to 5.6% (2003). On the other hand, SBS Transit[11] experienced a sharp fall in its ROTA in the same period from 12.7% (1998) to 2.1% (2003) largely because of the operating losses incurred in the operations of the NEL and Sengkang LRT system. **Annex G** shows the financial performance of the PTOs.

Committee's Conclusion

18. The Committee noted that the fare cap model had benefited the commuters by keeping fares and affordability in check through small fare

[9] 2004 figures are not available at the time of the review.
[10] Trans-Island Bus Services (TIBS) Ltd was acquired by the SMRT Corporation Ltd in 2001.
[11] SBS Transit operates both buses and RTS within the same public-listed company.

increases. The Committee also noted, however, that the low fare increases in the past 7 years had been partly due to the Government's measures to help the PTOs cut costs. For example, the vehicle tax rationalisation in 1998, which reduced the road tax for omnibuses from $5,500 to $1,600 a year, helped the PTOs save an estimated $13 million a year. The Government also helped to contain the bus service operating costs by extending the statutory lifespan for omnibuses from 12 years to 15 years in 1998, and subsequently to 17 years in 2003. The 2 extensions contributed to recurrent savings of about $15.5 million each year. As a further measure to help lower business costs in Singapore, the employer's CPF contribution rate was also cut from 16% to 13% in October 2003. The detailed list of major cost reduction measures that were implemented by the Government to help the PTOs since the implementation of the "CPI + X" fare cap in 1998 is shown in **Annex H**.

19. Given that there is a limit to how much further statutory costs can be reduced (e.g. the statutory lifespan for omnibuses cannot be extended indefinitely without affecting safety and reliability), and coupled by the cost pressures facing the PTOs under the current operating environment, the Committee is of the view that it would not be sustainable for the PTC to continue approving fare adjustments which are way below the cap in the absence of government subsidies.

20. The Committee also noted that although Singapore and Hong Kong do not provide operating subsidies for their public transport services, their bus and train fares are no less competitive than fares in cities such as London and New York City, where government subsidies are provided for public transport operations. In addition, both Singapore and Hong Kong's public transport systems are ranked more favourably, in terms of value for money, than their counterparts in London and New York City in the LTA's 2003 public opinion survey. The Committee is therefore of the view that operating subsidies may not necessarily lead to lower fares for commuters in the long term as it could distort the financial discipline of the PTOs. Hence, the current principles (which include no operating subsidies) underpinning the Government's financing framework for the public transport system should be retained as they have proven to be sound and effective.

IV RECOMMENDATIONS TO IMPROVE THE FARE REVIEW MECHANISM

1. Having concluded that the principles underpinning the existing fare review mechanism are sound, the Committee next examined the possible improvements to the review mechanism to ensure that public transport fares would continue to remain affordable to the general public, without compromising the need for the PTOs to remain financially viable. This section covers the Committee's review of the following areas:

    a. Fare review model;
    b. Fare adjustment formula;
    c. Fare adjustment mechanism;
    d. Affordability of public transport fares; and
    e. Other observations.

Fare Review Model

Present Model

2. The current fare review model is formulated based on the price-cap model commonly used to regulate monopolies. The underlying principle behind such a model is that it replicates market discipline to maximise efficiency and keeps cost at its lowest. In this model, any increase in public transport fares for the year cannot exceed the amount determined by a fare adjustment formula. The PTOs will therefore have to be more efficient and productive if they wish to increase their profits.

Committee's Review and Recommendations

3. The Committee considered various economic models on price regulation, and studied the practices of transport authorities overseas as well as other relevant industries such as utilities. A brief description of the practices and models of regulating public transport fares is given in **Annex I.**

4. Based on research on the regulatory models used overseas, there is no evidence to suggest a single superior model for price regulation. For each model, there are inherent shortcomings. Nonetheless, in the dialogue sessions with the Committee, representatives from the Experts and Feedback groups have indicated their preference for the price-cap model. This is because such a model provides incentives for the PTOs to be cost efficient within the service standards set by the regulator, and helps to ensure that fares remain affordable in the long term. As such, **the Committee recommends retaining the price-cap model for the regulation of public transport fares.**

Fare Adjustment Formula

Present Formula

5. The current formula used to determine the fare adjustment cap is:

Fare Adjustment Cap = $0.5CPI + 0.5WI - 0.5(0.5P_n)$, where

CPI = Change in Consumer Price Index;

WI = Change in Average Monthly Earnings (National Average); and

P_n = Change in Labour Productivity (National)[12].

6. It was previously decided that the formula would be simplified and presented as "CPI + X", where "X" would be a composite factor taking into account wage increases and productivity gains. The value of "X" was determined ex-ante using historical data and then set forward for a fixed period. The current value of "X", at 1.5%, was derived in 2000 using the CPI, WI and P_n figures from 1996 to 2000, and it is valid for a period of 5 years from 2001 to 2005.

Committee's Review and Recommendations

7. From the feedback received by the Committee, it is clear that the current formula is perceived to favour the PTOs over commuters. This is because the "+X" component of the formula gives the impression that the PTOs are entitled to a fare increase over and above inflation, regardless of their performance. The participants in the dialogue sessions also highlighted the mismatch between the fare increase quantum suggested by the formula and the prevailing economic

[12] Defined as the value added per unit of labour input, on a national scale.

conditions. For example, during the recent economic downturn, the formula continued to yield positive values even though wages had fallen and GDP growth was weak.

8. The Committee identified two main underlying problems with the current "CPI + X" formulation. One is the issue of perception and the other concerns responsiveness. First, presenting the fare adjustment cap formula as "CPI + X" gives the wrong impression that it is an inflation-plus formula. This is aggravated by the lack of transparency to the general public on how the value of "X" is derived. Hence, it was difficult for the public to understand why the fare adjustment cap formula should be determined by some percentage point over and above inflation. Second, the "CPI + X" formula locks in wage movements and productivity values from the preceding 5-year period and is not responsive to the prevailing economic conditions.

9. Hence, the Committee feels that the formula should be refined to improve its presentation and responsiveness. In today's formula, the "X" component lumps together the effect of wage increases and productivity improvements. **The Committee recommends that the fare adjustment formula should account for price and productivity components separately based on the latest available data.** In this way, it presents a clearer picture of the prevailing cost conditions facing the PTOs, and enables the extraction of productivity gains from the cost increases to be made more transparent. **The proposed formula will comprise a price component minus a productivity component.**

Price Component

10. Today, manpower cost is the biggest component in the PTOs' cost structure and constitutes around half of their total costs. The other half is made up of maintenance, fuel and energy costs, depreciation expenses, etc. Details of the PTOs' cost structure are shown in **Annex J**.

11. Given the high exposure of public transport operations to manpower cost, the Committee proposes that wage changes be captured separately from all other cost items in the proposed Price Index. Based on its share of the public transport operation cost structure, the Committee further proposes that the wage component be assigned a weightage of 50%. The remaining 50% of the Price Index will then be accounted for by the change in CPI. In this way, wage movements are captured annually and hence the responsiveness of the formula will be improved.

12. The Committee also noted that fuel and energy costs account for approximately 10% of the PTOs' total operating costs. Given that fuel price increases would have already been reflected to a certain extent in the price changes of the CPI's basket of goods, the Committee is of the view that there is no need to specifically cater for fuel price changes unless they are large and sustained. Where the CPI is inadequate in reflecting sustained fuel price increases, there may be a need to give a one-off fare adjustment[13].

13. On the proposed indicator to use for the wage component, the Committee is of the view that national wage changes is the most appropriate wage index to use, as it forces the PTOs to benchmark their manpower cost increases against national wage increases. Information on national wage changes is also publicly available and hence transparent to the public. The Committee also decided that the wage component should not be based on the PTOs' actual manpower cost increases as this would be akin to a cost-plus model which suggests that the more they pay their staff, the more they will be compensated by the fare adjustment formula.

14. In addition, since the PTOs' wage cost comprises both the employee's earnings (which is accounted for by the national wage data) and the employer's CPF contribution, any change in the employer's CPF contribution would invariably affect the PTO's manpower cost. Hence, the Committee proposes that the national wage index, which is to be used as the wage component, be adjusted to account for any change in the employer's CPF contribution rate. For example, if there is a cut in the employer's CPF contribution rate, the wage index should be reduced accordingly. Conversely, if the employer's CPF contribution rate is increased, the wage index should also be adjusted upwards.

15. **The Committee therefore recommends that the Price Index for the fare adjustment formula be**:

Price Index = 0.5CPI + 0.5WI, where

CPI = Change in Consumer Price Index over the preceding year; and

WI = Wage Index, defined as the change in Average Monthly Earnings (Annual National Average) over the preceding year, adjusted for any change in the employer's CPF contribution rate.

[13] The Committee notes that there is a mechanism put in place by the PTC, i.e. the Fuel Equalisation Fund (FEF), to mitigate the impact of sharp and transient spikes in fuel and electricity prices. However, the FEF is not equipped to cater to large and sustained fuel and electricity price increases.

16. To ensure currency of the Price Index, the relative weightage of the wage component and CPI will be reviewed every 3 years and recalibrated as necessary to reflect changes in the PTOs' cost structure.

Productivity Component

17. Conceptually, one way to extract productivity gains from the PTOs is to deduct their actual year-on-year productivity gains[14] from the cost increase component (i.e. the Price Index). The Committee feels that this could have the unintended consequence of discouraging the PTOs from maximising their productivity gains. This is because the greater the productivity gains achieved by the PTOs, the lower the fare adjustment quantum would be. This could result in the PTOs deliberately managing their productivity gains to reflect minimal or no increases, with a view to maximising the fare adjustment quantum.

18. Alternatively, the Committee proposes to set the productivity extraction for a fixed period based on a pre-set level of productivity improvement which the PTOs will need to meet if they wish to maintain their current level of profitability. In this way, it will provide greater certainty to both commuters and PTOs as to how much productivity extraction there would be for that fixed period.

19. Historically, the average productivity gain of the PTOs is approximately 0.6% per annum[15]. A tabulation of the PTO's productivity performance and the measures they had taken to increase their productivity are shown in **Annex K**. In determining the quantum of productivity extraction, the Committee feels that the target should be based on a sharing of the productivity gains achieved. The fare adjustment formula could therefore deduct half of the PTOs' average productivity gains, i.e. 0.3% from the Price Index. The Committee feels that this is a fair means of apportioning the productivity gains to both the PTOs and the commuters. For the commuters, they are guaranteed to benefit from half of all productivity savings in the public transport operations. For the PTOs, they too will be able to enjoy the fruits of their productivity efforts, and be incentivised to innovate further. In the long run, this will help to spur efficiencies in public transport operations and this will in turn benefit the commuters.

20. To be equitable to both the PTOs and the commuters, **the Committee recommends setting the productivity extraction at 0.3% for the next 3 years.** This ensures that the commuters can get a substantial share of the productivity improvements in public transport operations. For the PTOs, they will also be rewarded

[14] Defined as the change in value added per unit of labour input.
[15] For the period 1997 – 2002.

with the benefits of efficiency gains over and above this level of extraction. This level of extraction will be reviewed and adjusted by the PTC every 3 years, taking into account the PTOs' updated productivity figures. The updated figures will form the basis of the level of productivity gains that should be shared between the commuters and the PTOs for the following 3 years. **The proposed fare adjustment formula is as follows**:

Maximum Fare Adjustment = Price Index – 0.3%

Responsiveness of the Proposed Formula

21. Using the above proposed formula, a simulation was conducted for the period 1998 to 2004 to compare the outcome with the current "CPI + X" fare adjustment cap formula. The simulation shows that the proposed formula is more responsive to economic conditions as fare adjustments within the period can be both positive and negative, depending on the annual changes in CPI and WI. The responsiveness of the proposed formula as compared to "CPI + X" is shown in **Annex L.**

Fare Adjustment Mechanism

Present Mechanism

22. Today, the PTOs can submit their fare revision application, supported with cost justifications, to the PTC for approval at the annual fare revision exercise. The PTC will first scrutinise the PTOs' cost increases to determine if they were unavoidable. Any fare adjustment to be approved will be subject to the "CPI + X" fare cap determined for the year. In approving the fare adjustment, the PTC will also take into consideration the impact on commuters and the PTOs' viability. In view of the impact of economic cycles on commuters, the PTC has also committed to place greater emphasis on the prevailing economic conditions and the unemployment rate in its evaluation of fare revision applications.

Committee's Review and Recommendations

23. The Committee notes that the current mechanism whereby the PTOs justify fare revisions based on cost increases may have the unintended consequence of discouraging the PTOs from reducing costs and

improving efficiency. During the dialogue sessions, the PTOs provided feedback that the lack of transparency in the fare review mechanism does not provide them with any certainty or incentives to maximise efficiency gains from their operations. They have thus requested for a more objective and deterministic fare adjustment that is prescribed by a formula.

24. The Committee is of the view that while a more deterministic fare adjustment formula would incentivise the PTOs, there is also a need for a safeguard mechanism to protect commuters' interests. This is supported by the general consensus among the Feedback Group that fare adjustments should not be made automatic.

25. Taking into consideration the feedback of the different groups, **the Committee recommends that notwithstanding the fact that the fare adjustment formula determines the supportable fare adjustment in a given year; the PTC should retain the flexibility to vary the adjustment or to reject it, particularly when there are extenuating circumstances such as the following**:

    a. Adverse economic conditions; and
    b. Significant deterioration in the overall affordability of public transport fares.

    When the formula yields a negative value, the PTC may consider a downward adjustment, which could take the form of a fare rebate or a fare reduction.

26. To further ensure that commuters' interests are protected, the Committee further recommends that the PTOs' ROTA values be used as a reality check in the annual fare revision exercise. The Committee is of the view that while the PTOs should be allowed to earn reasonable returns, these should not be excessive when compared to the returns of other industries with similar risk profiles. The PTOs' profit levels should also be seen in the light of the sizeable capital investments needed to sustain their services.

Affordability of Public Transport Fares

Present Information

27. Currently, affordability is monitored using data from the HES conducted by the DOS every 5 years. The following indicators are tracked:

    a. Average monthly household expenditure on public transport as a percentage of the average monthly household income; and

b. Average monthly household expenditure on public transport as a proportion of total household expenditure.

Committee's Review and Recommendations

28. The Committee is of the view that while it is useful to rely on DOS's HES information to track affordability, this alone is not sufficient given that the information is updated only every 5 years. The Committee feels that there is a need to monitor the changes on a more regular basis. This observation is also in line with the feedback gathered from the various dialogue sessions that the affordability of public transport should be tracked more closely by the PTC. **The Committee therefore recommends that an indicator be established to closely track affordability trends so as to help the PTC in its fare adjustment decisions. The proposed affordability indicator should be based on the percentage of household income spent on public transport.**

Affordability Indicator

29. The Committee is of the view that a representative household (or characteristic family) that reflects the average public transport users should be established. As there is a spectrum of household income groups represented by various quintiles, the Committee proposes that the tracking be based on the second quintile (i.e. the 20th to 40th percentile group) as it is representative of the average public transport user.

30. The use of the second quintile to represent the average public transport user is supported by the LTA's 1997 Household Interview Survey (HIS) results. According to the survey, the majority of the households which have no access to private transport (including car, motorcycle and other vehicles) have a monthly income ranging from less than $1,000 to $4,999. This income range corresponds to the bottom 60% by household income distribution in the 2003 HES findings. The second quintile was therefore selected as the representative group since it is the median of the 60% group which accounts for the majority of public transport users.

31. In defining the characteristic family, the relevant household profile and travel patterns based on the HES and LTA's HIS were used. According to the HES, 80% of households in Singapore are one-couple nucleus families. For the second quintile, the average family size is 3.8, and the number of working persons 1.7. With this information, one possible profile of the characteristic family could be a household with 2 working

parents and 2 school-going children. From the HIS, further information on travel patterns (e.g. number and types of trips per day) can be obtained. This can then used to derive the public transport expenditure of the characteristic family, which can in turn be compared against its monthly household income.

32. Going forward, the public transport expenses by the characteristic family can be calculated every year based on the prevailing public transport fares and the travel pattern of the characteristic family. This can then be compared with the latest income for the characteristic family estimated based on the changes in the monthly earnings by industry sector made available by the Ministry of Manpower[16].

33. Based on this, the past trend of the percentage of household income spent on public transport expenditure for the characteristic family can be charted out. Further details on the definition of the possible profile of the characteristic family and the past affordability trend are shown in **Annex M.**

34. The affordability indicator shows that over the past 15 years (1988-2003), the characteristic family spent between 4.7% and 8.9% of its monthly income on public transport. Generally, a downward trend of the indicator is observed and this indicates that public transport fares have become more affordable over the years with fare increases lagging increases in average household income.

35. The Committee is of the view that the trend depicted by the affordability indicator for the characteristic family is reflective of the general public transport user's experience of the changes in affordability over the past 15 years. Moving forward, it can serve as a useful affordability indicator for the PTC to consider when evaluating applications for fare adjustments.

36. To ensure currency of information and consistency in trend analysis, **the Committee also recommends that the income of the characteristic family be re-aligned to the HES results whenever the survey is conducted (i.e. every 5 years).**

Other Observations

37. Through the various dialogue sessions, the Committee also noticed the information asymmetry between the PTOs and the other interest groups. For example, while the PTOs had tracked their own cost

[16] Data source is the Central Provident Fund (CPF) Board.

efficiencies and benchmarked against public transport operations in other countries to ensure that they were competitive, this was not apparent to the public. The Committee therefore suggests greater information sharing by the PTOs so that the public can be better informed about the PTOs' performance. Similarly, to improve the visibility to commuters, the PTOs could also communicate regularly the service improvements made by them to develop goodwill with the commuters. This is to gain their understanding and support for justifying fare adjustments. The task for defending fare adjustments should not be left to the PTC alone.

38. As the fare review mechanism is meant to determine fare levels which are affordable to commuters in general and, at the same time, sustainable to the PTOs, the Committee is of the view that the affordability needs for the low income group should be addressed outside this mechanism. Help for the low income group should continue to be rendered through a targeted approach which includes the Government's Public Assistance Scheme and other financial assistance schemes, as well as the operator and community-led initiatives such as the Public Transport Fund[17].

39. As highlighted by the PTOs, the Committee acknowledged that there could be large and irregular capital expenditures due to the nature of the public transport operations. Where the capital expenses are cyclical and hence predictable[18], the Committee is of the view that they should not constitute a justification for a special fare increase since the PTOs are able to plan ahead and make commercial provisions for them. Conversely, in situations where the large capital expenses are beyond the control of the PTOs (e.g. change of regulatory requirements), the Committee is of the view that the Government could consider providing separate assistance outside the fare review mechanism, where appropriate.

40. Lastly, the Committee noted that there have been calls to expand the scope of concessionary travel. Today, concession fares are offered by the PTOs to targeted groups of commuters such as students and senior citizens. While the Committee understands the sentiments of those who ask for an extension of the concessions, it is also cognisant of the fact that the cost of concessionary travel by these groups will have to be borne by full-fare paying commuters. Notwithstanding this, the Committee is of the view that the PTOs should give greater consideration to their social responsibility and extend concession fares wherever possible.

[17] In 2003, the PTOs, Singapore Labour Foundation (SLF), NTUC Club and Community Development Councils (CDCs) contributed $6 mil to set up the Public Transport Fund to cushion the impact of the cut in the CPF rate. The Fund helped the union members and low income families who were in financial hardship, to meet the public transport expenses of their school-going children.

[18] A specific example would be the replacement of the bus fleet when the statutory lifespan is reached.

V CONCLUSION

1. The Committee is of the view that, while the existing fare review mechanism has served us well, certain improvements could be made to it. In summary, its recommendations are:

   a. The fare adjustment formula should be improved for greater responsiveness and clarity. The proposed formula is:

   Maximum Fare Adjustment = Price Index – 0.3%

   where Price Index = 0.5CPI + 0.5WI, and 0.3% is the productivity extraction to be used for the next 3 years. CPI refers to the change in Consumer Price Index over the preceding year, and WI refers to the change in Average Monthly Earnings (Annual National Average) over the preceding year, adjusted for any change in the employer's CPF contribution rate.

   The new formula compensates the PTOs for structural cost increases in their operating environment. It, however, ensures that commuter interests are protected by extracting a productivity component based on the sharing of productivity gains achieved, thereby forcing the PTOs to improve their operational and cost efficiencies. Since wage movements are now accounted for annually, the formula is also more responsive to the actual economic conditions faced by the commuters in general as can be seen from the simulated results for the period from 1998 to 2004.

   b. The new formula will determine the supportable annual fare adjustment in a given year. Nonetheless, the PTC should retain the flexibility to vary the adjustment or to reject it particularly when there are extenuating circumstances such as the following:

i. Adverse economic conditions; and

ii. Significant deterioration in the overall affordability of public transport fares.

c. To further ensure that commuters' interests are protected, the PTC will also compare the PTOs' ROTA values with those of other industries with similar risk profiles at the annual fare revision exercise. This will serve as a reality check on the fare levels hitherto approved by the PTC.

d. The new formula will be valid for 3 years, after which the relative weightage of CPI and WI will be reviewed and recalibrated as necessary to reflect changes in the PTOs' cost structure. The productivity extraction quantum of 0.3% will also be reviewed and adjusted based on the updated average productivity figures.

2. The Committee also recommends that the PTC track the annual change in the percentage of household income spent on public transport by a characteristic family in order to monitor the affordability trend more closely. The characteristic family should be one that represents the main group of public transport users.

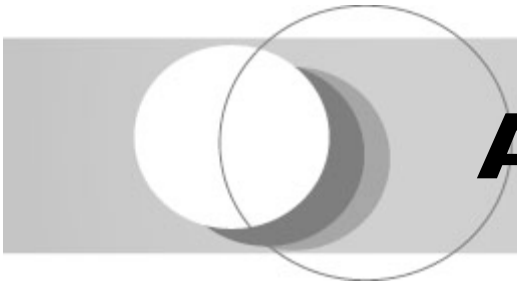
3. The Committee is convinced that there is a significant improvement in the optical clarity of the revised fare adjustment formula from the cost-plus perception of the existing "CPI + X" fare cap to the proposed price-minus formulation. The formula is underpinned by clear principles which not only helps the PTOs keep up with changes in operating costs, but through the targeted productivity sharing with the commuters, also incentivises them to be efficient in their operations. This will allow the PTC to better balance the affordability of public transport fares with the PTOs' viability over the long term. The sustainability and currency of the formula are also assured through the periodic reviews by the PTC. More importantly for the commuters, the fare adjustment formula will be more responsive to the economic conditions, with the flexibility retained for the PTC to vary or reject the fare adjustments under extenuating circumstances.

VI ACKNOWLEDGEMENTS

1. The Committee wishes to thank all those who have shared their feedback, comments and views with the Committee, and assisted in the development of this report.

2. The Committee wishes to express its appreciation to a number of academics and professionals who have offered invaluable views and suggestions. They include Assoc Professor Anthony Chin, Assoc Professor Michael Li, Assoc Professor Chin Hoong Chor, Assoc Professor Chen Shaoxiang, Dr Paul Barter, and Ms Soo Cheng Ghee. Special appreciation is also extended to the representatives from the Feedback Group (including the grassroots and student unions) and to the PTOs for sharing their concerns and suggestions on how to improve the fare review framework.

3. Lastly, the Committee would like to thank the staff of the Ministry of Transport, the Land Transport Authority and the Public Transport Council for providing the secretariat support for this review and report.



ANNEXES

Annex A

SUMMARY OF FEEDBACK/ SUGGESTIONS RECEIVED

1. The feedback/suggestions received by the Committee can be classified under the following areas:

   a. Existing "CPI+X" formula;
   b. Fare adjustment;
   c. Measure of affordability; and
   d. Other issues.

Existing "CPI + X" Formula

2. SBS Transit suggested having automatic fare adjustments based on a fare adjustment cap formula, "Transport Price Index (or TPI) – X", where TPI = 0.5WI + 0.5CPI, and X = ky, where "WI" and "CPI" are the change in the Wage Index and the change in CPI respectively; "y" is the productivity of the land transport industry sector; and "k" represents the proportion of productivity gains to be shared with the commuters. The formula is to be applied automatically every year and subjected to review every 3 to 5 years. The formula would incentivise the operators to perform better than the land transport sector in terms of productivity, and allow for sharing of productivity gains with the commuters. SBS Transit was of the view that its formula was more transparent since all the data used were published and publicly available. It also suggested that operators be allowed to carry forward the fare adjustments in years that they chose not to increase fares.

3. SMRT suggested having automatic fare adjustments based on a fare adjustment cap formula, "CPI + X +/- Z – (a+b+c)", where "CPI" is the change in CPI; "X" is a public transport inflator which factors in the operators' returns; "Z" is to account for exogenous cost changes; "a" and "b" are productivity gains achieved; and "c" is the graduated sharing mechanism for productivity gains. The formula is to be applied automatically every quarter. SMRT also suggested that the formula should incentivise the operators to make productivity gains and increase non-fare profits within the system.

4. Some participants in the Experts Group (comprising the academics and professionals) observed that the problem with the current mechanism was one of perception. They noted that the public may not understand the existing fare formula and suggested that the derivation of "X" be

made transparent and explained publicly. Other participants were of the view that the time lag in the formula created uncertainty for the PTOs. The uncertainty of fare increases also did not incentivise the PTOs to make improvements.

5. There was a suggestion from the Feedback Group (including the grassroots and student unions) to have a composite cost component in lieu of the CPI to reflect public transport operation costs. Another suggestion was to allow for the sharing of profits beyond the allowable rate-of-return on assets.

6. To improve on the responsiveness of the existing formula to economic conditions, both the Experts and Feedback groups also suggested using more current data for determining "X".

Fare Adjustment

7. The PTOs held different views on the frequency of fare adjustments. However, both PTOs agreed that fare adjustments should be made automatic. They also proposed that flexibility be given for them to roll over the fare increases. In the event that the formula yielded negative values, SMRT proposed that fares could remain unchanged but suggested that the PTOs could contribute the quantum to a public transport fund which could be set up to help the lower income group.

8. There was general consensus among the Feedback Group that fare adjustments should be modest and regular but not automatic. The Experts Group suggested instituting a trigger mechanism for fare adjustments to be within an allowable range of fare changes. However, the Experts Group was divided in their views on whether to make the fare adjustments automatic. There was also a suggestion that fare adjustments should be accompanied by service improvements.

Measure of Affordability

9. There was a comment from the Feedback Group on the lack of a measure or indicator to track the affordability of public transport fares although affordability is presently addressed through the PTC's deliberation in its evaluation of fare applications. Both the Feedback and Experts groups suggested that the main or average group of public transport users be targeted for tracking affordability. The Experts Group also suggested that the affordability for the lowest income group be checked as increases in fares have a greater impact on them when compared to the average income public transport users.

Other Issues

10. The Feedback Group generally agreed that the communication channel with the public should be improved and the fare adjustment formula and mechanism be made more transparent. They also suggested better communication with the public in several areas:

    a. Availability of assistance schemes;
    b. Service improvements undertaken by the PTOs; and
    c. Statistics on affordability.

11. There were also suggestions for the provision of public transport subsidies for the low income group. Similar suggestions included introducing season tickets for the needy and/or special passes for unlimited travel in a given period.

12. The Experts Group commented that competition in the public transport services could be explored to address the fare issues and suggested that huge capital expenditures should be managed outside the fare review mechanism.

Conclusion

13. The above are the main suggestions received and they have been discussed at length during the dialogue sessions and considered by the Committee in its review.

14. The Committee's deliberations on most of these suggestions have been reflected in the main report. Some areas of the review which have taken into account these considerations include:

    a. Retention of the price-cap model for regulating fares;
    b. Responsiveness of the formula;
    c. Incentives for the PTOs to improve its productivity;
    d. Considerations for commuters' interests in the review mechanism; and
    e. Monitoring of the affordability of public transport fares.

15. Where appropriate, the suggestions have been incorporated in the Committee's final recommendations.

Annex B

ATTENDEES OF THE DIALOGUE SESSIONS

The Public Transport Operators (PTOs)

SBS Transit Ltd (Bus and RTS)

1. Mr Ong Boon Leong, Chief Operating Officer
2. Mr Simon Lane, Chief Operating Officer (Rail)
3. Mr Woon Chio Chong, Executive Vice-President, Operations (Bus)
4. Ms Linda Ng, Vice-President, Finance
5. Mr Vincent Loh, Director, Service Development (Bus)

SMRT Corporation Ltd (SMRT Trains and SMRT Buses)

1. Ms Saw Phaik Hwa, President & CEO
2. Mr Patrick Lau, Executive Vice-President, Finance
3. Mr Vincent Tan, Vice-President, SMRT Trains
4. Mr Lee Seng Kee, Vice-President, SMRT Buses
5. Mr Morris Piper, Director, SMRT Buses
6. Mr Chew Hooi Lian, Deputy Director, SMRT Trains
7. Mr Matthew Traynor, Manager, SMRT Trains
8. Mr Ozbee Kee Puay Hiang, Manager, SMRT Trains
9. Ms Kang Huey Ling, Deputy Director, SMRT Trains

The Experts Group (Academics and professionals)

1. Dr Anthony Chin, Assoc Professor, Department of Economics, National University of Singapore (NUS)
2. Dr Michael Li, Assoc Professor, Nanyang Business School, Nanyang Technological University (NTU)
3. Dr Chin Hoong Chor, Assoc Professor, Department of Civil Engineering, NUS, and Vice-Chairman, Chartered Institute of Logistics & Transport
4. Dr Chen Shaoxiang, Assoc Professor, Nanyang Business School, NTU, and Director of Education, Chartered Institute of Logistics & Transport
5. Dr Paul Barter, Visiting Fellow, Lee Kuan Yew School of Public Policy, NUS
6. Ms Soo Cheng Ghee, Senior Economist, Economics Division, Ministry of Trade & Industry

The Feedback Group
(Including the grassroots and student unions)

1. Dr Goh Chong Chia, Co-Chairman, Feedback Group on Physical Development
2. Mr Patrick Ang, Vice-President, Handicaps Welfare Association
3. Mr Seah Seng Choon, Executive Director, CASE
4. Mr Eric Chua, Member, Young People's Action Group (YPAG) (Transport)
5. Mr Max Lee, Member, YPAG (Transport)
6. Mr Chiang Heng Liang, Assistant Treasurer, Kolam Ayer Community Club
7. Mr Tirumavalavan, Vice-Chairman, Kembangan-Punggol Citizens' Consultative Committee
8. Mr Abdullah bin Abdul Latif, Member, Residents' Committee, West Coast Ville
9. Mr Jeremy Ee, President, Student Union, National University of Singapore (NUS)
10. Mr Thomas Lee Kok Rong, President, Accountancy & Business Club, Nanyang Technological University (NTU)
11. Mr Victor Ng, President, Student Association, Singapore Management University (SMU)
12. Mr Julian Soo, Student Observer, SMU

Annex C

CHRONOLOGY OF FARE ADJUSTMENTS (1990 – 2004)

DATE	FARE ADJUSTMENTS
1 October 1990	**BUS FARE REVISION** ▪ 10 cents increase in non air-con fares generally. ▪ 5 to 10 cents increase in air-con fares with no change to the minimum (60 cents) and maximum fares ($1.20). **RTS FARE REVISION** ▪ 10 cents increase for all distance-related fares. ▪ Commensurate adjustments in concession ticket prices.
January 1991	**INTRODUCTION OF TRANSFER REBATE** ▪ 25 cents rebate for adults & senior citizens. ▪ 10 cents rebate for school concession fares. ▪ Applies to trunk-to-trunk bus transfers and trunk bus to RTS transfers, and vice versa.
1 June 1994	**BUS FARE REVISION** ▪ Extension of the maximum bus fare by another fare stage (over 14.4 km), to $1.00 and $1.30 for non air-con and air-con services respectively (equivalent to a 10 cents increase). **RTS FARE REVISION** ▪ Adjustment of RTS fare structure, resulting in a 10 cents increase affecting 28% of the RTS trips.
1 October 1995	**BUS FARE REVISION** ▪ Extension of the maximum bus fare by another fare stage (over 18.4 km) to $1.10 and $1.40 for non air-con and air-con services respectively (equivalent to a 10 cents increase). ▪ 5 cents increase in feeder fares and industrial fares to 30 cents and 45 cents respectively, with the corresponding introduction of a 5 cents transfer rebate for feeder buses.

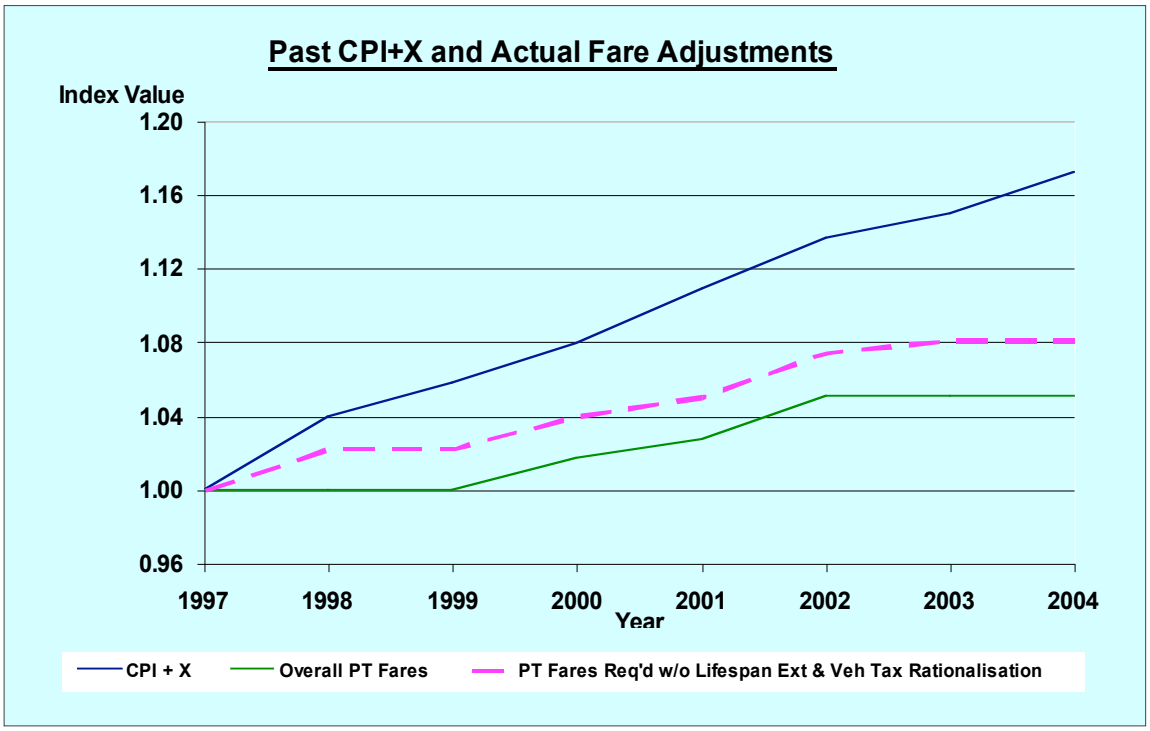
DATE	FARE ADJUSTMENTS
	▪ $2 increase in concession stamps prices for tertiary students, NS men and SBS shareholders. **RTS FARE REVISION** ▪ Change in the distance-related fare structure to charge more for mid to long distance trips. ▪ Adjustment of the fare structure to allow for differential pricing between farecard fares and Single Trip Ticket fares. ▪ Overall average fare increase of 5.15 cents.
7 July 1996	**INTRODUCTION OF INTRA-TOWN FARES** ▪ Fares for Intra-town bus services for journeys up to the bus interchange were made similar to non air-con feeder (residential services) fares. Intra-town fares beyond the interchange were set at the minimum fares of trunk services, at $0.50 and $0.60 for non air-con and air-con services respectively.
1 June 1997	**BUS FARE REVISION** ▪ 5 cents increase across the board for non air-con services on farecard fares. No change for air-con farecard fares. ▪ 10 cents increase across the board for air-con and non air-con services on cash fares. ▪ Conversion of flat fare to distance-related fares for industrial bus services. ▪ $3- $5 increase in non air-con bus concession stamp prices. **RTS FARE REVISION** ▪ 10 cents increase for all Single Trip Ticket fares but with no change in the maximum fare of $1.60. ▪ 10 cents discount on adult farecard fares before 7:30am on Mondays to Saturdays except public holidays. This was to encourage morning off-peak RTS travel into the CBD area. ▪ $2 to $5 increase in RTS concession ticket prices.
1 January 1999	**BONUS REBATES GIVEN ON FARES** In response to the recommendations from the Committee on Singapore's Competitiveness, the PTOs gave a 5% bonus rebate on all ticket types for 1 year (till 31 December 1999), except Single Trip Tickets and corporate advertiser tickets, to help reduce the cost of using public

DATE	FARE ADJUSTMENTS
	transport. The rebate was given by way of an additional 50 cents for every $10 travel value of an adult farecard purchased or topped up. Concession tickets also received varying rebate values.
6 November 1999	**NEW FARES FOR BUKIT PANJANG LRT SYSTEM** ▪ Similar to fares on existing RTS lines, distance-related fares were adopted for Bukit Panjang LRT system.
1 June 2000	**BUS FARE REVISION** ▪ 10 cents increase in adult feeder bus fares (cash and farecard) with a corresponding increase in the feeder transfer rebate by 10 cents (from 5 cents to 15 cents). ▪ 5 cents increase in child/student feeder bus fares (cash and farecard) with a 10 cents increase in the feeder transfer rebate (from 5 cents to 15 cents). ▪ Extension of the maximum fare by another fare band (over 23.5 km) to $1.30 and $1.60 for non air-con and air-con services respectively for cash fares, and $1.25 and $1.50 for non air-con and air-con services respectively for farecard fares. ▪ Addition of 2 fare bands to the fare structure of Jurong industrial bus services (maximum fare was increased by 20 cents). **RTS FARE REVISION** ▪ Introduction of intermediate band for child/student RTS fares, which increased fares by 5 cents for journeys between 5.6km and 14.4km. ▪ Between 5 cents and 10 cents increase in adult farecard fares. Maximum distance fare band extended, resulting in 15 cents increase for that band. ▪ Between 10 cents and 20 cents increase in Single Trip Ticket fares.
1 December 2000	**LIGHT RAPID TRANSIT (LRT) SINGLE TRIP FARE** ▪ 10 cents increase in the LRT Single Trip Ticket adult fares (the new minimum became 80 cents while new maximum was $1.00). No change in adult farecard fares (minimum was 60 cents and maximum was 80 cents).

DATE	FARE ADJUSTMENTS
1 July 2001	**BUS FARE REVISION** ▪ 10 cents increase in feeder bus fares with corresponding increase in transfer rebates by 10 cents (feeder bus transfer rebate became 25 cents, the same as the transfer rebate involving non-feeder bus services). **No RTS Fare Revision**
1 July 2002	**BUS FARE REVISION** ▪ 3 cents increase in adult EZ-Link card fares. ▪ 5 cents increase in adult farecard fares. ▪ 10 cents increase in adult cash fares. ▪ 50 cents increase in concession stamp prices for primary/secondary students. ▪ $2 increase in concession stamp prices for tertiary students. ▪ $3 increase in concession stamp prices for NS men. **RTS FARE REVISION** ▪ 4 cents increase in adult and senior citizen EZ-Link card fares. ▪ 5 cents increase in adult and senior citizen magnetic farecard fares.
18 January 2003	**NEW FARES FOR SENGKANG LRT SYSTEM** ▪ Distance-related fares similar to those for Bukit Panjang LRT system were adopted for Sengkang LRT system.
20 June 2003	**NEW FARES FOR NORTH EAST LINE (NEL)** ▪ Differentiated fares for the NEL at 5 cents to 25 cents higher than the existing RTS fares, or an average of 16.5 cents more. ▪ Fares for child/student/NS men concessions remained the same as that for the existing RTS lines.

Annex D

"CPI+X" FARE CAP AND ACTUAL FARE ADJUSTMENTS



Source: The Public Transport Council (PTC).

Explanatory notes:

The green line shows the overall public transport fare increases that the PTC had approved from 1998 to 2004. One important factor that contributed to the suppressed rate of fare increases was the major cost reduction measures implemented by the Government to help the operators (see **Annex H**). These measures include, among others, the vehicle tax rationalisation in 1998 (estimated savings of $13mil a year) and the extension of statutory lifespan for omnibuses in 1998 (estimated savings of $9mil a year) and in 2003 (estimated savings of $6.5mil a year). The pink dotted line shows the public transport fare increases that would have been required to cover the increase in public transport operating costs if there had been no vehicle tax rationalisation in 1998, and the extensions of statutory lifespan for omnibuses were not implemented in 1998 and 2003. It does not include the value of other measures provided by the Government as shown in **Annex H**.

Table 1 on the next page shows the detailed comparison of the "CPI + X" fare cap, actual fare adjustments and wage increases.

Table 1: Comparison Of The "CPI+X" Fare Cap, Actual Fare Adjustments And Wage Increase

Year	Fare Cap (CPI + X)[19]	Fare Increase [20]			Wage Increase [21]
		Bus	RTS	Overall	
1998	4.0%	Nil	Nil	Nil	10.5%
1999	1.7%	Nil*	Nil*	Nil*	-5.9%
2000	2.4%	1.5%	2.4%	1.7%	10.9%
2001	2.8%	1.3%	Nil	1.0%	6.0%
2002	2.5%	2.2%	2.5%	2.3%	0.8%
2003	1.1%	Nil	Nil	Nil	-0.9%
2004	2.0%	Nil	Nil	Nil	-
Geometric Mean (1998 – 2004)	2.4%	0.7%	0.7%	0.7%	3.4%

* A 5% transport rebate was given by the public transport operators for 1 year in 1999.

Source: The PTC, compiled from various public sources.

[19] Value of "X" was set at 2% for 1998-2000, and at 1.5% for 2001-2005.

[20] Refers to the percentage increase in the fare revenue as a result of a fare adjustment. Increase in individual trip fares may differ, as they are dependent on the approved fare structure.

[21] Average Monthly Earnings (Annual National Average), adjusted for changes in the Employer's CPF contribution rates.

Annex E

HOUSEHOLD INCOME AND EXPENDITURE ON PUBLIC TRANSPORT

Table 1: Average Monthly Household Income By Quintile Group Of Household Income

Quintile Group Of Household Income	HES Year			
	1988	1993	1998	2003
All Households	**$2,213**	**$3,829**	**$5,262**	**$5,659**
Lowest 20%	$642	$1,093	$1,368	$1,279
Second Quintile	$1,106	$1,891	$2,588	$2,651
Third Quintile	$1,608	$2,778	$3,900	$4,048
Fourth Quintile	$2,388	$4,150	$5,770	$6,070
Highest 20%	$5,323	$9,233	$12,685	$14,244

Source: Household Expenditure Survey (HES), Department of Statistics (DOS).

Table 2: Average Monthly Public Transport Expenditure Per Household

HES Year	Average Monthly Expenditure Per Household On:	
	Public Transport*	All Items
1988	$79	$1,548
1993	$126	$3,034
1998	$149	$3,686
2003	$160	$3,932

* Includes taxis.

Source: HES, DOS.

Table 3: Average Monthly Public Transport Expenditure Compared to Household Income and Total Expenditure*

HES Year	Average Monthly Public Transport Expenditure Divided By:	
	Household Income	Total Expenditure
1988	3.6%	5.1%
1993	3.3%	4.2%
1998	2.8%	4.0%
2003	2.8%	4.1%

* Derived from Tables 1 and 2.

Table 4: Average Monthly Public Transport Expenditure Per Household By Quintile Group Of Household Income

HES Year	Quintile Group of Household Income	Average Monthly Expenditure Per Household On:	
		Public Transport*	All Items
1998	Lowest 20%	$90 (5.2%)	$1,724 (100.0%)
	Second Quintile	**$131 (5.4%)**	**$2,421 (100.0%)**
	Third Quintile	$162 (5.1%)	$3,184 (100.0%)
	Fourth Quintile	$186 (4.6%)	$4,044 (100.0%)
	Highest 20%	$176 (2.5%)	$7,061 (100.0%)
2003	Lowest 20%	$101 (5.7%)	$1,778 (100.0%)
	Second Quintile	**$145 (5.5%)**	**$2,652 (100.0%)**
	Third Quintile	$184 (5.5%)	$3,351 (100.0%)
	Fourth Quintile	$192 (4.2%)	$4,530 (100.0%)
	Highest 20%	$179 (2.4%)	$7,351 (100.0%)

*Includes taxis

Source: HES, DOS.

Annex F

COMPARISON OF PUBLIC TRANSPORT FARES WITH OTHER CITIES

Table 1: Comparison of Fares With Other Cities

City	Average Bus Fare	Average RTS Fare	Average Bus Fare (PPP adjusted)*	Average RTS Fare (PPP adjusted)*
Singapore	S$ 0.65	S$ 0.94	S$ 0.65	S$ 0.94
Hong Kong	S$ 1.26	S$ 1.58	S$ 1.31	S$ 1.63
London	S$ 1.30	S$ 3.51	S$ 1.00	S$ 2.80
New York City	S$ 1.40	S$ 1.87	S$ 1.28	S$ 1.71

*Adjusted using the 2002 Purchasing Power Parity (PPP) conversion factor[22] published by the World Bank.

Source: The Land Transport Authority (LTA), compiled from various public sources.

Table 2: Comparison Of Fares Over GNI Per Capita[23] With Other Cities

City	Average Bus Fare Over GNI Per Capita	Average RTS Fare Over GNI Per Capita
Singapore	1.68	2.43
Hong Kong	2.84	3.54
London	2.26	6.33
New York City	2.13	2.85

Note: All figures quoted are to be multiplied by 10^{-5}.

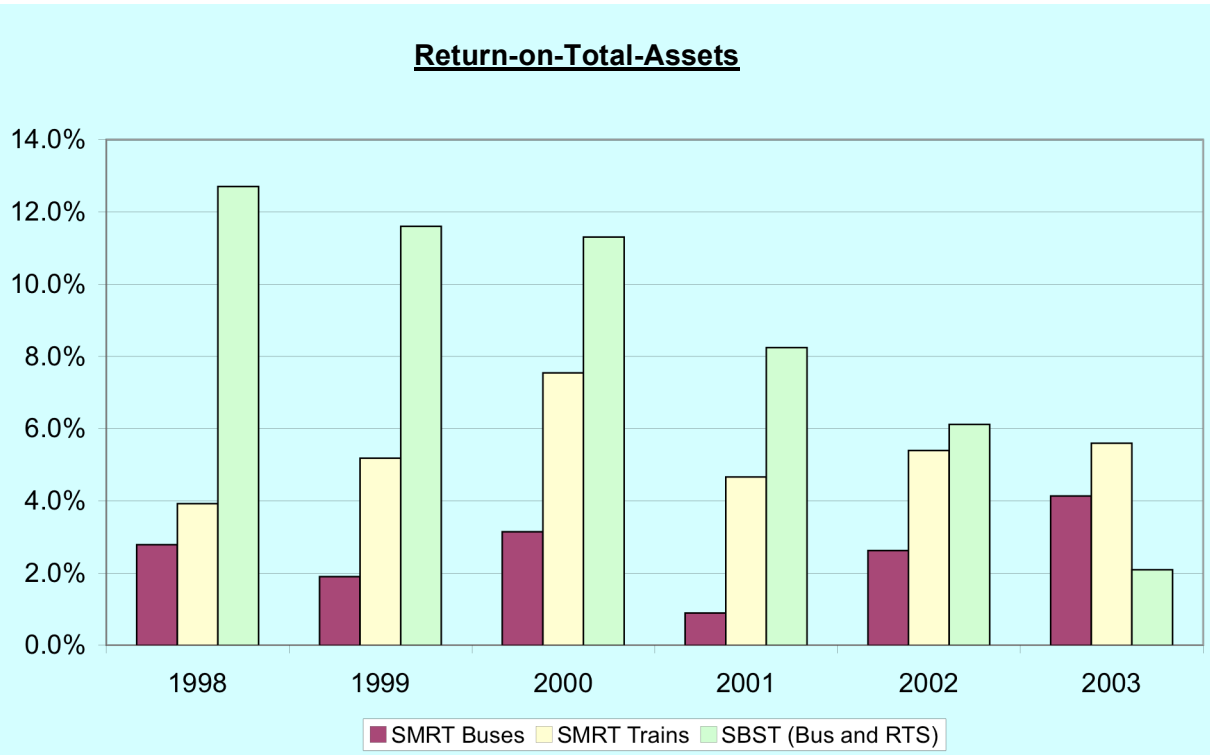
Source: The LTA, compiled from various public sources.

[22] The PPP is the rate of currency conversion at which a given amount of currency will purchase the same volume of goods and services in two countries. Another way of looking at the PPP is that when it is used as a currency converter, the price level is the same in both countries.

[23] Generally, Gross National Income (GNI) is the market value of goods and services produced by the citizens of an economy including those residing abroad, over a given period of time. "GNI per capita" is GNI divided by the population.

Annex G

FINANCIAL PERFORMANCE OF THE PUBLIC TRANSPORT OPERATORS



	1998	1999	2000	2001	2002	2003
SMRT Buses	2.8%	1.9%	3.1%	0.9%	2.6%	4.1%
SMRT Trains	3.9%	5.2%	7.5%	4.7%	5.4%	5.6%
SBST (Bus and RTS)*	12.7%	11.6%	11.3%	8.2%	6.1%	2.1%

* In 2003, SBS Transit (SBST) started operating the RTS (North East Line and Sengkang LRT system). It runs both its bus services and RTS operations within the same public-listed company.

Source: Compiled from the various submissions given by the public transport operators to the PTC.

Annex H

MAJOR COST REDUCTION MEASURES IMPLEMENTED (1998 - 2004)

YEAR	MAJOR COST REDUCTION MEASURES IMPLEMENTED
1998	▪ Road tax reduced from $5,500 to $1,600 per year per vehicle for omnibuses. Estimated saving of about $13 million a year. ▪ Statutory lifespan of omnibuses extended from 12 to 15 years. Estimated saving of about $9 million a year. ▪ Road tax rebates ($100 - $250 per passenger car unit) given for ERP implementation (1998 - 2002).
2001	▪ The cap on the percentage of public scheduled buses and RTS fleet that may have full-body external advertisements was raised from 20% to 40%. ▪ Road tax rebates ($100 per vehicle for omnibuses) given as part of the package of the off-budget measures.
2002	▪ Road tax reduced by $200 per year per vehicle for omnibuses.
2003	▪ Frequency of inspection for omnibuses revised from 6-monthly to yearly. ▪ Statutory lifespan of omnibuses extended from 15 to 17 years. Estimated saving of about $6.5 million a year. ▪ Employer's CPF contribution rate reduced from 16% to 13%.

Notes: As part of the Government's efforts to help keep public transport fares affordable, the bus interchanges, bus terminals and RTS stations are leased to the PTOs at a nominal rate of $12 per year. The RTS operators are also allowed to retain the revenue collected from commercial facilities, such as shop spaces and advertising panels to help defray costs of maintaining the RTS stations. The Government also allows them to apply for asset replacement grants to cover the inflationary component when they replace the RTS operating assets. As for the public bus operators, their public scheduled buses are exempted from the requirement to secure Certificates of Entitlement (COEs).

Annex I

PRACTICES/MODELS OF REGULATING PUBLIC TRANSPORT FARES

1. The Committee looked into the various practices adopted by other authorities in the regulation of public transport fares, as well as the models used by regulatory bodies in other industries.

2. In **Hong Kong**, the regulator has adopted different regulatory systems for different segments of the public transport industry. For franchised buses, a basket of factors is used to assess bus fare adjustments. Bus operators are allowed to earn a rate-of-return on assets of 13%, beyond which the excess will be shared equally between the operators and the commuters. On the other hand, rail operators enjoy autonomy to set fares. However, they are required to consult the Transport Advisory Council and the Legislative Council on fare adjustments.

3. In **London**, bus routes are awarded through a competitive tendering process for a usual duration of five years. Bus operators will bid by the cost of operating a route. The fare revenue collected will be kept by the authority. For 2004, the average public transport fare increase was pegged to the retail price index.

4. In the case of **Sydney,** the regulator considers a set of criteria when determining the maximum fares for buses and trains. The criteria covers broad areas such as costs and efficiency, financial viability, consumer protection (including service standards), and environmental issues. In particular, the cost recovery level of the operators is one of the key factors for consideration as the authority needs to contain the level of subsidies given to the operators.

5. In **Toronto**, the bus and transit services are state-owned and provided by the authorities. The public transport fares are subsidised and the fares are set based on a targeted revenue-to-cost ratio. For 2003, the revenue-to-cost ratio was set at 80% and the shortfall was recovered through subsidies.

6. The Committee also looked at other regulatory models such as the **Long Run Marginal Cost (LRMC**) **model** which is commonly used in the utilities market for price determination. The LRMC is the incremental cost that would be incurred by the regulated entity to produce an additional unit of output. The LRMC is therefore based on forward-looking cost instead of the historical cost of the firm. An

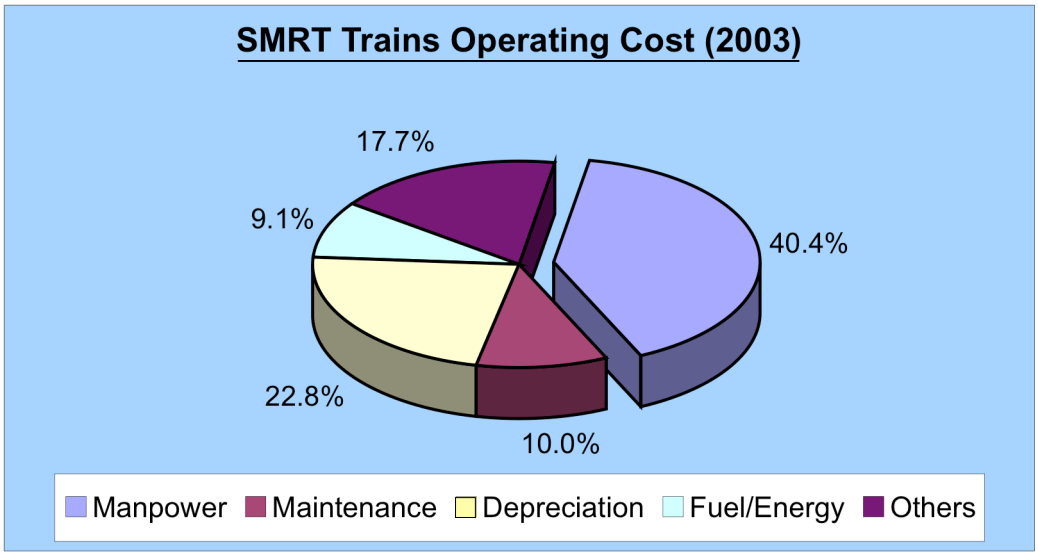
important characteristic of industries adopting the LRMC model is the homogeneity of the product that is being regulated.

7. In Singapore, the LRMC model is used by the Energy Market Authority to check the market power of electricity generation companies ("gencos"). The vesting contracts commit the gencos to sell a specified amount of electricity at a price set at the LRMC of a new entrant genco, using the most efficient electricity generation technology. This LRMC covers the investment cost, running cost (both fixed and variable) and a reasonable return to the genco investor.

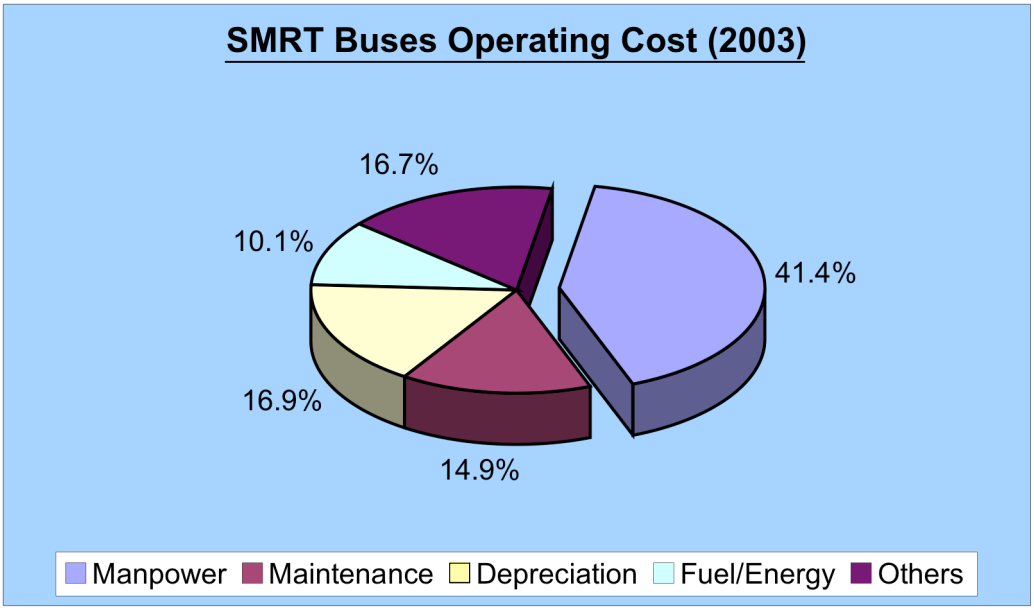
8. The Committee also looked into the **Rate-of-Return model** where prices are set at a level so as to enable the firm to earn a specified rate-of-return. The rate-of-return model is commonly used in industries dominated by a few firms. The shortcomings of the model are the difficulty in prescribing the allowable rate-of-return and the lack of incentives for the firm to contain costs.

Annex J

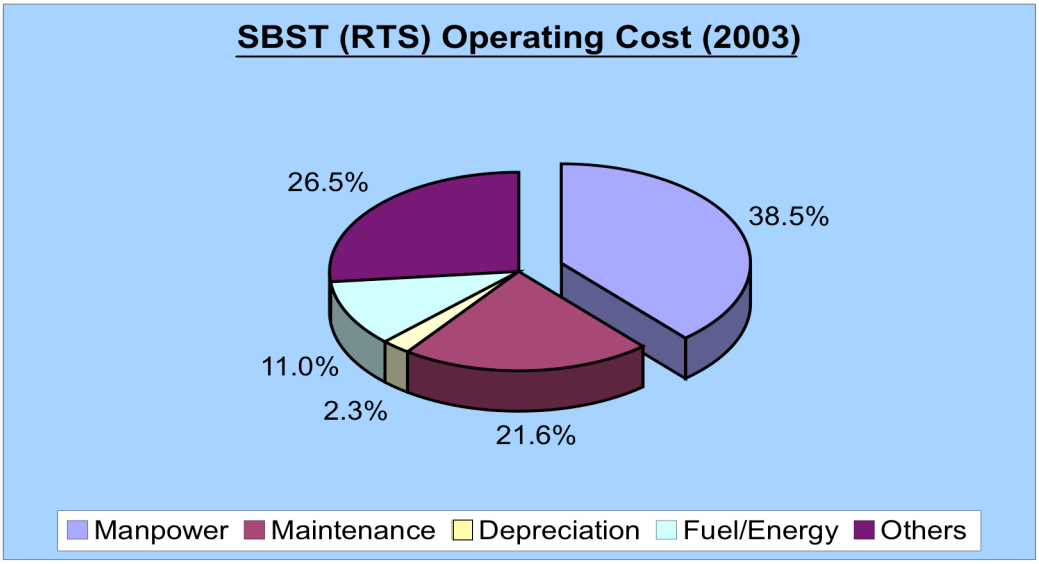
COST STRUCTURE OF THE PUBLIC TRANSPORT OPERATORS



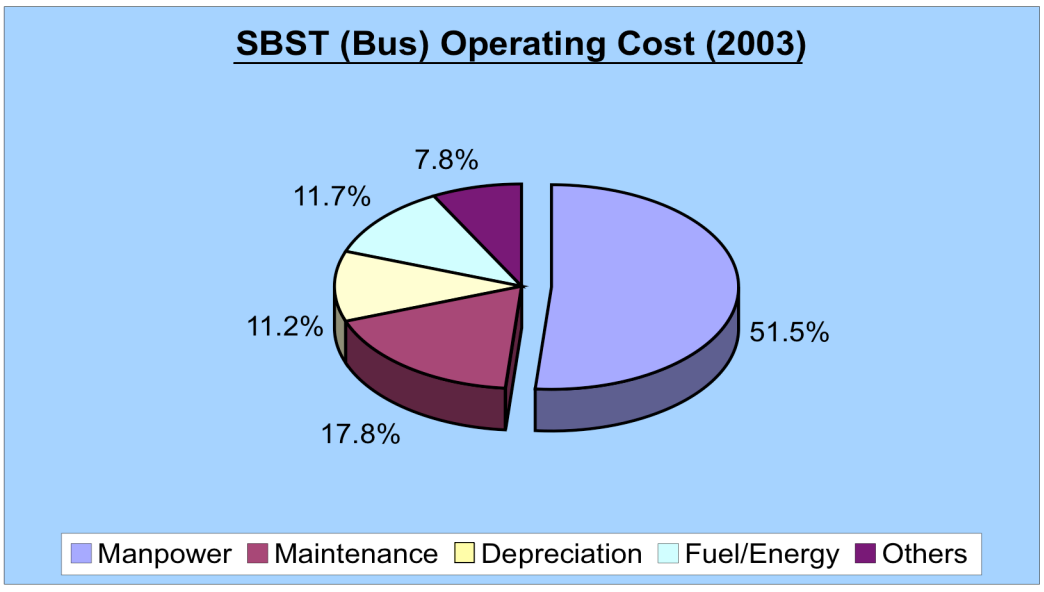
Source: Compiled from public transport operator's submission to the PTC.



Source: Compiled from public transport operator's submission to the PTC.



Source: Compiled from public transport operator's submission to the PTC.



Source: Compiled from public transport operator's submission to the PTC.

Annex K

PRODUCTIVITY PERFORMANCE AND IMPROVEMENT MEASURES

Table 1: Comparison Of Productivity Performance Of The PTOs

Year	Change in PTOs' Value Added Per Employee	Change in National Labour Productivity
1997	5.5%	2.3%
1998	0.2%	-3.6%
1999	-3.6%	7.3%
2000	6.9%	5.4%
2001	-4.8%	-5.2%
2002	-0.6%	3.6%
Average	0.6%	1.6%

Source: The Land Transport Authority (LTA), compiled from various public sources.

Examples of Productivity Improvement Measures Implemented by the PTOs

SMRT Trains and SMRT Buses

- **Manage manpower costs.** E.g. reduce staffing requirements, such as the deletion of the third shift and better roster arrangement for RTS operation staff; adjust staff allowances and claims.

- **Optimise RTS and bus services.** E.g. convert the RTS airport service from a through-train service (Boon Lay - Changi Airport) to a shuttle service (Tanah Merah - Changi Airport); adjust the off-peak RTS services to better fit actual passenger demands.

- **Enhance asset utilisation.** E.g. deploy high capacity buses during peak periods.

- **Manage maintenance costs.** E.g. adjust the maintenance cycles to optimally reduce the down-time.

- **Manage utility costs.** E.g. reduce the operation of lifts to save energy; install water saving devices.

- **Harness technology to increase process efficiency.** E.g. use resource scheduling software for bus deployment; computerise work processes; adopt optimisation software to generate more efficient crew schedules.

- **Manage inventories.** E.g. reduce inventory holding levels; use alternative suppliers for spare parts; implement reverse auction for supply of tyres and fuel.

- **Seek efficient outsourcing opportunities.** E.g. outsource cash handling function and security services.

SBS Transit (Bus and RTS)

- **Manage manpower costs.** E.g. institute efficient and effective scheduling of bus crews; reduce the reserve pool for bus captains.

- **Optimise asset utilisation.** E.g. consolidate the number of bus districts.

- **Manage maintenance costs.** E.g. selectively turn off ticketing machines and fare gates at the North East Line (NEL) stations thereby optimise asset maintenance schedule.

- **Manage utility costs.** E.g. reduce the lighting and air-con levels at the NEL without resulting in passenger complaints.

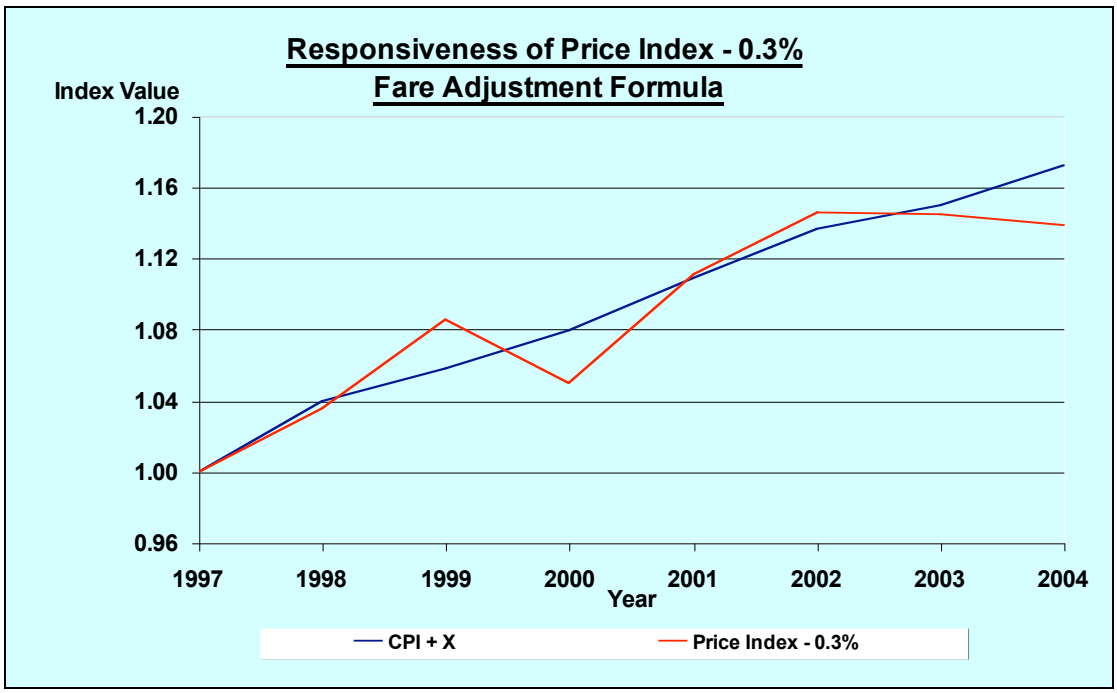
- **Harness technology to automate and improve process efficiency.** E.g. implement Service Control System for buses.

- **Manage inventories.** E.g. implement reverse auction in the supply of tyres, lubricants and diesel; reduce inventory holding levels.

- **Outsource non-core functions.** E.g. outsource building maintenance services.

Annex L

RESPONSIVENESS OF THE FARE ADJUSTMENT FORMULA



Source: The Committee on the Fare Review Mechanism.

Explanatory notes:

The red line shows a simulated application of "Price Index – 0.3%" from 1998 to 2004, so as to illustrate its responsiveness as compared to that of "CPI + X". It is computed using the prevailing values of CPI and WI at each year. It assumes a constant productivity extraction of 0.3%. As can be seen from the graph, unlike the "CPI +X" line which is rising throughout the period, the simulated "Price Index – 0.3%" line registered both upward and downward movements. For example, during the past few years from 2002 to 2004, the simulated "Price Index – 0.3%" line showed a downturn trend which is more reflective of the weak economic climate then.

Annex M

AFFORDABILITY TREND OF PUBLIC TRANSPORT FARES

The Characteristic Family

1. The characteristic family is meant to represent a typical household that depends mainly on public transport to meet its transport needs. It is constructed based on the findings of the HES and HIS conducted by the DOS and LTA respectively and represents a typical household in the second quintile by household income group of the HES.

2. The use of the second quintile to represent the average public transport user is supported by the LTA's 1997 HIS results. According to the survey, the majority of the households which have no access to private transport (including car, motorcycle and other vehicles) have a monthly income ranging from less than $1,000 to $4,999. This income range corresponds to the bottom 60% by household income distribution in the 2003 HES findings. The second quintile was therefore selected as the representative group since it is the median of the 60% group which accounts for the majority of public transport users.

3. A possible profile of the characteristic family is one that has four family members, comprising two adult parents and two children (assuming one goes to secondary school and the other goes to primary school). This is supported by the 1998 HES findings that the majority (80%) of households in Singapore are one-couple nucleus households and the average household size is 3.8 for the second quintile. Since the average number of working persons in each household in the second quintile is 1.6 according to the HES, it is therefore assumed that both adults in the family are working.

4. Based on the 1997 HIS results, the majority of trips made on public transport consist of home, school and work place as their destinations. These trips are made on both the bus and RTS. To ensure that the travel profile of the characteristic family captures the trips made on different modes, the travel pattern of the characteristic family has been designed to include a mix of rides on feeder and trunk buses, as well as the RTS. To further monitor the change in fares across different fare types, the travel profile also captures both the adult and concession fares. In addition, the family's total monthly expenditure on public transport has also been cross-checked against the HES findings on the second quintile's household expenditure on public transport.

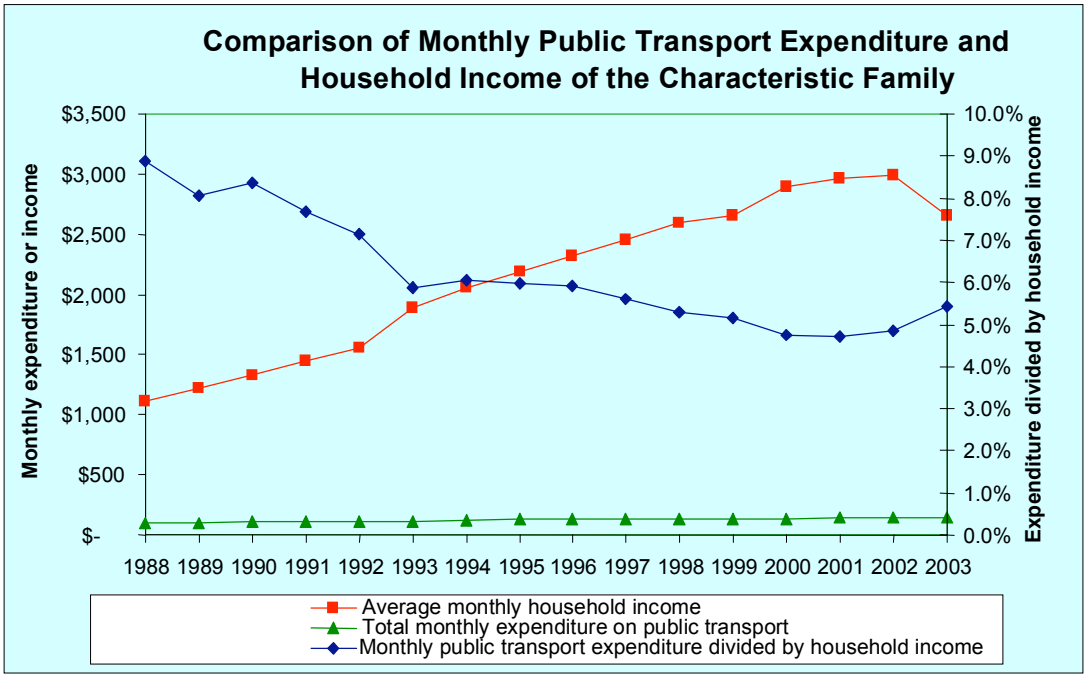
5. The following summarises the weekday travel pattern of the characteristic family:

   - One of the working adults commutes to/from work by RTS and the other, by trunk bus;
   - The adults travel 12.4km and 6.6km respectively by RTS and bus. These are the average trip lengths in 2003;
   - The RTS trip made by the adult requires the use of a feeder bus to make a transfer; and
   - The child in the secondary school commutes to/from school by bus using a concession pass and the child in the primary school walks to a school nearby.

6. Going forward, the percentage of household income spent on public transport by this characteristic family can be estimated and tracked annually. With the prevailing public transport fares, and the travel pattern of the characteristic family, the public transport expenses incurred by the characteristic family can be calculated every year. This can then be compared with the annual change in income for the characteristic family estimated based on the changes in the monthly earnings by industry sector made available by the Ministry of Manpower[24].

7. The comparison of monthly public transport expenditure and household income of the characteristic family from 1988 to 2003 is shown in the following chart.

[24] Data source is the Central Provident Fund (CPF) Board. The Committee's correlation analysis shows that for this characteristic family, its monthly household income (from HES data) is closely correlated to the average monthly earnings of all industry sectors (from CPF Board data). Therefore, the Committee is of the view that, as a close proxy, the change in the monthly average earnings of all industry sectors can be used to estimate the change in the monthly household income of the characteristic family for the years in between HES data points.



Source: The Committee on the Fare Review Mechanism.

Explanatory notes:

The red line shows the upward trend of the average monthly household income of the characteristic family for the last 15 years. The family's monthly household expenditure on public transport has remained largely constant as shown by the green line. The blue line shows that affordability has improved as can be seen from the downward trend of the affordability indictor (i.e. the ratio, in percentage terms, of the monthly household expenditure on public transport to monthly household income of the characteristic family).

GLOSSARY OF TERMS

Affordability Indicator	An indicator to track the affordability of public transport fares over time. The Committee has defined it as the percentage of a characteristic family's average monthly household income spent on public transport.
Characteristic Family	A representative household that captures the profile and travel pattern of the average public transport user, defined for the purpose of tracking the affordability of public transport fares over time.
Consumer Price Index (CPI)	An index to measure the price level of a basket of goods and services purchased by an average household with respect to a base year. When used in the fare adjustment formula, it refers to the change in CPI (i.e. not the absolute CPI) as compared to the preceding year.
Distance-Related Fare	The fare that is correlated to the distance travelled.
Fare Adjustment Formula	A formula that is used to determine the quantum of fare changes.
Fare Cap	The limit on the maximum allowable increase in fares.
Fare Level	The fare charged on a particular service or network.
Fare Review Mechanism	A mechanism adopted to evaluate and process requests from public transport operators for changes in fares.
Fare Revision	An exercise to consider requests from public transport operators for changes in fares.
Fare Structure	The way in which the fare for a trip is calculated and the range of fare types that may be offered.
Fare Stages or Fare Bands	Broad stages or bands that prescribe the fares payable based on defined ranges of the distance made in a trip.
Household Expenditure Survey (HES)	A survey conducted by the Department of Statistics (DOS) once every 5 years, to collect detailed information on the consumption expenditure of private households. The HES results are published by the DOS.

Household Interview Survey (HIS)	A comprehensive transport survey conducted by the LTA every 5-6 years, on various households' personal and travel characteristics of a sample of approximately 1%, drawn from all the households captured in the National Database on Dwellings. It is used to obtain a snapshot of travel behaviour and patterns of residents island-wide.
Light Rapid Transit (LRT)	A light capacity transit line that is integrated with the mass rapid transit (MRT) lines and implemented as part of the Rapid Transit System (RTS) network. E.g. Bukit Panjang, Sengkang and Punggol LRT systems.
Long Run Marginal Cost (LRMC) Model	A pricing model commonly used in the utilities market (e.g. electricity). The LRMC is the incremental cost that would be incurred by a firm for producing an additional unit of output in the long run.
Price Cap Model	A model of regulating price where price increases are capped according to a specified formula. The formula usually comprises a cost and a productivity component.
Public Transport Operators (PTOs)	Bus operators that are licensed by the Public Transport Council (PTC) to provide basic scheduled bus services; and RTS operators that are licensed by the LTA to provide RTS services. E.g. SBS Transit Ltd provides both bus and RTS services; SMRT Trains Ltd and SMRT Light Rail Pte Ltd provide RTS services; and SMRT Buses Ltd provides bus services.
Quintiles	Statistically, quintiles are groups of data (or cases) that divide a sample of data into five groups (or five quintiles) based on a range of a particular variable, e.g. household income distribution. The first (or lowest) quintile by household income group refers to the lowest 20th percentile group of household income distribution; the second quintile refers to the 20th - 40th percentile group; and so on.
Rapid Transit System (RTS)	All rapid transit lines, including mass rapid transit (MRT) lines and light rapid transit (LRT) systems that are implemented by the LTA under the Rapid Transit Systems Act.
Rate-of-Return Model	A regulatory model where prices are set at a level to enable operators of public transport to earn a specified rate-of-return. It is essentially a cost-plus model.

Return-on-Total-Assets (ROTA)	A financial indicator which shows how much profit a company generates for every dollar of assets invested. Companies such as the public transport operators are very asset intensive, meaning they require huge investments in machinery or equipment to generate profits.
Transfer Rebate	The amount of discount which is given to the commuters when they make bus to/from bus or bus to/from RTS transfer on a single journey. It is deducted from the fare of the second and subsequent legs of the journey, provided that the transfers made are valid and within the stipulated time limits.
Universal Service Obligation (USO)	An obligation set by the PTC for compliance by the bus operators to provide a daily scheduled bus service to within 400 meters of any residence (in areas where there is at least a minimum level of daily passenger demand), at an acceptable service interval (or headway), even if the bus service is unprofitable.